OpenLMIS Sustainability Final Report & Handover
December 4, 2019

EXECUTIVE SUMMARY

Advances in health-related technology have enabled major improvements in health systems in low- and middle-income countries, resulting in more accessible, high-quality patient care and more transparent, data-driven decision making. The development and implementation of OpenLMIS, a multi-stakeholder initiative that has enabled governments in eight African countries to transition from manual, paper-based supply chain management, is an excellent example of how technology can be used to bring about systemic improvements. OpenLMIS, like other health global public good digital platforms, was initially developed with donor funding and is now grappling with long-term sustainability as its current funding sources decline.

OpenLMIS is the first "global good" public health platform to explore moving from a donor-driven business model to a more commercially oriented model. The OpenLMIS journey will benefit other global good platforms as they grapple with their own paths to sustainability, and for future donor-driven technology platforms, which will need to be developed with long-term sustainability in mind.

Over the last 13 months, Resonance worked with the Bill & Melinda Gates Foundation, the United States Agency for International Development, VillageReach, and other OpenLMIS partners to explore business models that would allow OpenLMIS to operate without donor funding. This involved explorations of the current public health customer base and donor-driven funding model; an analysis of adjacent markets such as private health, agriculture, education, and humanitarian relief; and an assessment of multi-stakeholder partnerships.

Following this assessment, Resonance recommends that OpenLMIS transform its relationship with existing customers, establish a new, expanded customer base, and develop new partnerships to enable growth. This report will outline both the results of Resonance's exploration and more details of these recommendations.

PART I: PROJECT CONTEXT

About OpenLMIS

OpenLMIS is the first open-source logistics management information system (LMIS) for medical supply chains designed specifically to meet the requirements of low-income countries, helping them make the first step toward digitization of paper-based systems. The platform was conceived in 2008 when PATH, funded by the Rockefeller Foundation, identified health information system requirements across multiple countries. By 2011, the Ministries of Health in Zambia and Tanzania had implemented the platform with support from John Snow, Inc. (JSI) and the United States Agency for International Development (USAID). Following these initial implementations, Rockefeller and the Bill & Melinda Gates Foundation (BMGF) funded the OpenLMIS initiative and hired VillageReach to develop and steward the platform.

Like many open-source platforms, OpenLMIS is managed by a Governance Committee, which includes donors, implementers, and technology partners. The mission and goals of the platform are based on the ideal of collaboratively developing shared, open-source software that improves access to health commodities in low-income countries.

Currently OpenLMIS works with Ministries of Health to manage and automate logistics processes at more than 11,000 public hospitals, clinics, pharmacies, and other facilities in Angola, Benin, Cote d'Ivoire, Guinea, Malawi, Mozambique, Tanzania, and Zambia. Donors, implementers, and governments recognize that OpenLMIS can bring efficiencies to public health systems that are not yet ready for the high cost or digital complexity of commercially available products offered by companies such as SAP, Oracle, and others.

Sustainability: Moving from Donor Funding to Independence

Since OpenLMIS's inception, donors have been the sole funding source for both product development and deployment. However, Digital Square's recently developed digital global health standards dictate that health global public good technology platforms should eventually move from donor funding to a more self-sustaining model. Additionally, the goal of developing and deploying such platforms is to ultimately build the capacity of Ministries of Health, allowing them to implement digital health strategies and systems on their own or with local partners. Given its success in Africa, and the length of time that it's been supported, OpenLMIS is quickly reaching a point in its maturity that it will need to graduate away from donor funding for core operations.

OpenLMIS is currently supported by two types of donor funding, which are intricately intertwined:

(1) **Implementation funding** is deployed at the country level, through donor-funded programs (e.g., USAID's GHSC-PSM program) that support Ministries of Health. This funding is relatively secure, due to the long-term nature of engagements at the country level.

(2) **Core funding** is currently managed by a team of OpenLMIS Stewards at VillageReach, who develop, maintain, and update product features, as well as manage the OpenLMIS Community, its pipeline of new opportunities, and other global activities. Donors are pushing for these global activities to become independently funded over time. However, maintaining core funding – even if donors aren't supporting it – is critical to meet the needs of Ministries of Health and any future customers. Without it, OpenLMIS will quickly become obsolete.

Core Attributes of Any Viable Future State

Resonance has facilitated numerous discussions with the Community about the core attributes of the OpenLMIS initiative that will stay constant in any future state. These conversations have helped frame decisions about how to move forward. While these conversations have included many different attributes and different levels of consensus, the following attributes have stayed constant throughout:

- **Community** – A huge asset of OpenLMIS is the Community that supports it. While the Community will evolve, buy-in to drive future OpenLMIS sustainability planning is imperative. Ultimately, any solution needs to work for the Community and its core mission.

- **Software and Stewardship** – With funding from BGMF, VillageReach employs several Stewards who are responsible for the management of the OpenLMIS initiative, enabling improvements to the software, advocating to donors and customers, and promoting Community activities. These functions will continue to be an important part of OpenLMIS in the future.

- **Public Health Customers** – The Community is looking for a future-state solution that enables the product to continue to service and strengthen its current customer base within public health and continue to serve the needs of other public health customers in the future.

The Final Report: Solving for Long-Term Sustainability

In October 2018, BMGF hired Resonance to conduct a sustainability study for OpenLMIS. Our mandate was to assess expansion channels for the product and to evaluate new business models that would reduce reliance on donor funding, thus ensuring long-term viability. Over the last year, Resonance systematically analyzed new customer and country segments, consulted with subject-matter experts across sectors and geographies, developed and evaluated new business models, created a flexible financial model, analyzed structural options, and collaborated with members of the Governance Committee to reimagine OpenLMIS (See Appendix A for a description of the Resonance approach).

This report distills decisions made during OpenLMIS Community discussions in Johannesburg, South Africa, in November 2019 and integrates recommendations from our analysis, outlining next steps and key considerations. Further annex documents provide additional detail and supplementary materials to aid the OpenLMIS Community as it moves toward sustainability (See Appendix B for a list of further documents and analysis from the project).

The primary audience for this report is the OpenLMIS Stewards and Community members. In addition, other organizations that are currently managing or developing open source global good platforms may also find valuable insights and conclusions from this work.

PART II: STRUCTURAL RECOMMENDATIONS AND NEXT STEPS

The OpenLMIS Community must first determine the organizational structure that will allow the platform to most effectively transition into commercial viability. Below we detail our recommendation for organizational and platform management structure, and list further structural options sequentially if circumstances change.

Enter a Partnership Exploration Period to Pursue a Partnership with IQVIA

By partnering with IQVIA, a world leader in using data, technology, and advanced analytics to improve healthcare and human health, OpenLMIS can gradually transition its software development and stewardship capabilities during a 12- to 18-month partnership exploration phase. This transition will allow for the development of new revenue streams that leverage the strengths of both entities. IQVIA has expressed interest in OpenLMIS because of the good will the initiative has generated among its public health customer base, as well as the valuable data contained on the platform.

Exploring a partnership with IQVIA is currently backed by the OpenLMIS Community. In a survey of Governance Committee members to gauge interest in different options and determine organizational commitment, 86% of participating voting Governance Committee members expressed excitement about pursuing this option. The Community highlighted the following benefits to this approach to a partnership model:

- Aligns with current partner organizations' agendas and broader market trends;

- Captures the value of OpenLMIS while being less risky than creating a new entity, assuming the partner organization has a strong commitment to keeping the Community and mission intact; and

- Enables improved economies of scale in software development and sales.

While the Community was largely excited about such a partnership, there were concerns about whether a private-sector company would fail to support current OpenLMIS implementations in the eight current

countries, de-prioritize Community activities, and fail to allay possible concerns from Ministry of Health officials. These concerns underscore the importance of a partnership exploration phase to flesh out the Community's "must haves" (e.g., maintaining public health implementations and continuing to promote the Community), understand the partnership landscape, and enter negotiations on terms and conditions.

If, through the exploration period, the Community decides that an IQVIA partnership is the right path forward, we would expect three probable outcomes:

1. Software and stewardship would eventually transition to IQVIA with several roles moving from VillageReach to IQVIA;

2. Donor funding would need to be secured over an agreed-upon period to show goodwill and help make the business case for the partner;

3. The partnership would only move forward if it meets mutually agreed upon milestones throughout early stages of the engagement.

While we believe that the best next step is to explore a partnership with IQVIA based on both the interest from the company and the OpenLMIS Community, it should be noted that IQVIA is the first (and currently the only) viable private sector partner to step forward. While conversations continue with IQVIA, the Community should determine whether the exploration phase should include additional prospective partners.

Focusing on IQVIA is the most expeditious approach to move toward negotiations, however limiting the discussions to one partner could affect negotiating position or an understanding the true market value of OpenLMIS. At the outset of the exploration phase, the Community will first need to decide whether to focus solely on IQVIA or concurrently build a more structured partnership landscape that includes other prospective partners.

Other Structural Options

It's possible that the exploration phase may lead to the conclusion that IQVIA or another private-sector entity does not meet the needs of the OpenLMIS platform and the Community. If this is the case, the Community should consider other options for OpenLMIS to transition away from donor funding.

Creating an Independent Entity

If the Community does not find the right private-sector partner or determines that it wants more control over the OpenLMIS platform in the future, then it could create an independent entity to house OpenLMIS. The new entity – likely a non-profit organization – would be responsible for maintaining current implementations with Ministries of Health while developing a product for private health customers, which our research showed to be the most promising market expansion opportunity. The entity would require initial seed stage or philanthropic funding to stand on its own and prove the business model. Over time, it could pursue outside funding from impact investors or other sources.

While starting a new entity is costly and carries considerable risk, it also provides the Community with more control of the vision, purpose, and product development for OpenLMIS, as well as more stability for existing implementations.

In our discussions in Johannesburg, Community members expressed concern about the financial and customer projections, and whether donors would be as supportive of this option as a partnership. For these reasons, Resonance does not recommend pursuing the creation of a new entity until after all

partnership pathways have been explored. Jeff Tenenbaum, a legal specialist in non-profit development and governance, attended the June 2019 sustainability workshop and spoke through the benefits, mechanics, and considerations for starting a non-profit entity. We recommend that the Governance Committee engage him if it decides to pursue this path in the future.

Global Goods Incubator

Many digital health global public goods are grappling with similar questions of sustainability, and this presents an opportunity for more collaboration with other global good communities to achieve efficiencies and capture key learnings. A 'global goods incubator' would offer a community of practice, shared steward and maintenance services, and fiscal sponsorship. This type of umbrella organization would provide a shared services model that is more cost effective than each global good supporting itself.

The Digital Impact Alliance's Open Source Center (OSC), aspires to become such an umbrella organization in the next year or two, and to fill the much-needed role of fiscal sponsor and primary maintainer, in addition to advisor, for a host of global goods. However, OSC must still meet funding and other goals before it can fully fill this role. Currently, the OSC acts as a convener of global goods by offering access to its network, grants, resources, and consultations, through its membership program, and is therefore still an important partner in the near-term.

Although there is strong interest in a 'global goods incubator' model from the OpenLMIS Community (as well as representatives of other global goods) such an incubator does not exist currently and is therefore not a viable short-term option for sustainability.

Unsupported Release

Because OpenLMIS is an open-source platform, a last option is to release the code for another undetermined organization (or more than one organization) to support without additional donor funding. If the Community is not successful in finding an appropriate partner or creating a stand-alone entity, this type of unsupported release would be the only option. In this case, the IP and licensing would be released, and any future software development would be left to the broader open-source community or individual implementers.

Because this option would mean releasing the code base to the world, it would naturally mean that there would be no core community, no centralized product management and maintenance, and no single entity to manage any future partnerships.

This is the least viable or attractive option to the OpenLMIS Community because it feels strongly about its value and importance as a collaborative that develops shared, open source software to improve health commodity distribution.

PART III: PLATFORM COMPONENT RECOMMENDATIONS

The sections below outline further recommendations regarding other components of the product that form the path for OpenLMIS to become a more scalable and market-based tool.

Diversify the Customer Base

A key pillar of sustainability is to determine the viability of a commercial customer base that will pay for OpenLMIS. Through the sustainability project, Resonance explored a number of possible customer segments, including education, agriculture, humanitarian response, and logistics. While prospective

customers in these sectors also have supply chain technology needs, they largely require a different feature set than is currently offered on the OpenLMIS platform. Therefore, we recommend pursuing private health providers in emerging markets (clinic networks, hospitals, and pharmacies). The needs of these networks are similar to current public sector health customers, suggesting an opportunity to leverage OpenLMIS's current feature set without requiring significant additional investment in product development. We recommend continuing to explore new private health customers with IQVIA or any other private-sector partner. Resonance's customer and country segmentation analysis and findings can be found through the documents in Appendix B and can be a starting point for such explorations.

Resonance developed a list of prospective customers in countries with robust private health markets, conducted scoping discussions with twelve of these prospects, and introduced a product prototype to four customers. It will be important to continue to build relationships with these initial customers for feedback on product design.

Over time, if OpenLMIS is proven to be a commercially viable product serving the private health sector, Resonance suggests exploring Agriculture as the most promising adjacent market. However, due to rapidly changing technology trends and market dynamics, our recommendation would be to conduct a detailed scoping to assess the customer landscape before pursuing any new customer segments.

Switch Public Health Implementations to a Paid Model

In keeping with Digital Square's standards for global goods, which encourage country-led and country-managed digital health systems, we recommend that OpenLMIS transition current public health customers from a free, donor-funded model, to a paid model. Such payments would not only encourage local ownership but would also support OpenLMIS sustainability.

With the support of USAID, the OpenLMIS Governance Committee will ask the current country-level implementations to contribute funding for bug fixes, updates, and other ongoing stewardship services. Based on our financial modeling and discussions with USAID and partners, we recommend an annual maintenance fee of $25,000 per implementation. The payments will initially be borne by USAID-funded implementers with the expectation that host governments and local partners would take over the payments over time.

Develop Strategic and Business Development Partnerships

The OpenLMIS initiative was built on the notion that different organizations with complementary resources are greater than the sum of their parts, enabling stronger public health supply chains in low- and middle-income countries. Throughout the sustainability project, Resonance connected with potential partners that could contribute insights, technical capabilities, and access to new customers. We recommend continuing discussions with these and other organizations to source future partners for strategic and business development roles.

Strategic, or technical, partners provide financial and non-financial resources, guidance, and expertise. These might include current OpenLMIS Governance Committee members, 'Trusted Partners,' and new organizations not currently involved in the initiative. For example, African Health Business, a Kenyan advisory firm specializing in forming health partnerships, has already expressed interest in being involved in OpenLMIS and could fill a role as a strategic partner.

Business development, or channel, partners will unlock customer relationships through a formal revenue sharing agreement. For example, Mezzanine a South African for-profit mission-driven information

systems company and subsidiary of Vodacom, is interested in a partnership with OpenLMIS and is well placed to fill a channel partner role. Mezzanine offers a mobile application for last- mile health patient services and is interested in integrating its product with an LMIS system to increase its reach and provide support to vulnerable populations. Such a bundle could increase the reach and customer base for both products.

PART IV: CONCLUSION

OpenLMIS has been incredibly successful s in supporting more than 11,000 public hospitals, clinics, pharmacies, and other facilities in eight countries. However, with a shift in donor funding, the time has come for the platform to become self-sustaining. In the best of circumstances, such a transition is complex, but with 15+ partner organizations participating in the OpenLMIS Community, moving into a viable future state will be even more difficult.

The good news is that OpenLMIS has viable options for future sustainability. IQVIA potentially provides an immediate and viable partnership that will maintain both the current implementations and future expansions into new customer segments. Should this partnership fail to come to fruition, other options exist, including establishing partnerships with other private-sector entities, development of a free-standing entity, and agreeing to release the code.

No matter what the OpenLMIS Community decides in the future, we believe that the foundation that has been built can live on and provide millions of people with access to life-saving medications.

APPENDIX A: RESONANCE'S APPROACH

The Resonance Sustainability team has a core focus on market-based solutions through new business models, programs, and partnerships that enable the private sector to support development agendas. Below is an overview of the key components of the Resonance OpenLMIS Sustainability project, which used a combination of methods to determine and analyze opportunities for the future state of OpenLMIS:

- **Ongoing Communications and Stakeholder Engagement.** Throughout the project, Resonance worked closely with members of the OpenLMIS Community to lean on their unique areas of expertise and ensure alignment as the project progressed. Activities included business modeling workshops, working group sessions, facilitated focus group discussions, updates during the monthly Governance Committee calls, and weekly status reports.

- **Foundational Research.** During the first three months of the project, Resonance conducted primary and secondary research to gain learnings from previous sustainability scoping work, understand the OpenLMIS current state, and develop early hypotheses. Activities included a rapid desk review of previous OpenLMIS sustainability studies, a market sounding to two OpenLMIS implementation countries, and stakeholder interviews and mapping.

- **Market Research.** We analyzed opportunities for OpenLMIS expansion to understand commercial viability of the product. Activities included country and customer segmentation, market sounding visits to non-OpenLMIS countries, expert and customer interviews, and prototype development and testing.

- **Business Model Development.** Using our assessment of new market and customer opportunities, Resonance created a flexible business model with recommendations on the necessary components of future state operations. The model encompassed an estimation of revenue and cost, break-even point, a framework for the pursuit of channel partners, an overview of potential investors, structural options for software and stewardship (e.g., an independent entity), and other components.

- **Transition Planning.** The project culminated in collective transition planning to ensure the Community has the tools to enter into the next phase of partnership exploration. Activities included coordination and planning meetings with Stewards, discussion facilitation during the Johannesburg Community Meeting, and creating this central repository of documents as a handover to the Community.

APPENDIX B: SUSTAINABILITY STUDY DOCUMENTS

Resonance produced numerous documents for the OpenLMIS Community and key stakeholders throughout this sustainability study. We have categorized them below by research component, as described in Appendix A. These documents include both analysis and functional documents for future use (e.g., interview guide).

These documents can be found in the OpenLMIS Google Drive (within the sustainability folder), which is managed by the OpenLMIS Steward team at VillageReach. Note that documents listed below with an asterisk (*) hold confidential information and are only found in the Google Drive with special permissions.

Foundational Research

OpenLMIS Core Attributes and Early Business Model Ranking (PDF, February 2019)

Stakeholder Map (PDF, January 2019)

Stakeholder Interview Report (Word, January 2019)

Rapid Data Review (Word, December 2018)

Market Research

A Case for Private Health (PDF, November 2019)

Private Health Customer Profiling & Feedback (Word, October 2019)

Private Health Contact & Customer Information* (Excel, October 2019)

Agriculture Sector Viability (Word, September 2019)

Private Health Market Sizing (Excel, September 2019)

OpenLMIS for Private Health Prototype Presentation (PowerPoint, September 2019)

OpenLMIS for Private Health Prototype Interview Guide (Word, September 2019)

Private Health Customer Interview Guide (Word, July 2019)

Country and Customer Segmentation Analysis (PDF, June 2019)

Market Sounding Trip Report (Word, May 2019)

Business Model Development

Costing Calculations (Excel, November 2019)

Financial Model (Excel, November 2019)

Investors and Funders List & Questions Template (Excel, October 2019)

Financing Tools, Types, Outcomes & Impact (PDF, September 2019)

Early-Stage Business Models (PDF, January 2019)

Business Model Scorecard Template (PDF, January 2019)

Transition Planning

OpenLMIS Community Meeting Day 1 Slides (PDF, November 2019)

OpenLMIS Community Meeting Day 2 Slides (PDF, November 2019)

IQVIA Partnership Concept Note (PDF, November 2019)

DIAL OSC Concept Note for OpenLMIS Sustainability (PowerPoint, November 2019)

Options for OpenLMIS Engagement with DIAL OSC (Word, November 2019)

Mezzanine Overview for OpenLMIS (PDF, November 2019)

Pitch Deck OpenLMIS Private Health (Google Slides, November 2019)

OpenLMIS Fundraising Executive Summary Draft (Word, October 2019)

Go-To-Market Planning by Lenati (PowerPoint, September 2019)